

Entrepreneur Factor Inputs and
Small Business Longevity*

by

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Abstract

This study analyzes nationwide samples of black and nonminority entrepreneurs who entered into small business ownership between 1976 and 1982. Econometric models are estimated that seek to differentiate traits of owners whose firms were still operating in late 1986 from those whose businesses had discontinued. Explanatory variables used to differentiate surviving firms from discontinuances include qualitative and quantitative measures of owner human capital, demographic traits, and owner financial capital inputs at the point of business startup.

Certain characteristics typify the firms that are most likely to remain in business, irrespective of whether the owner is black or white:

- 1) investment of substantial amounts of financial capital at the point of business startup;
- 2) competing in the open marketplace, as opposed to catering to a minority clientele;
- 3) high levels of owner educational attainment.

The higher business discontinuance rates observed among blacks are rooted strongly in the lower financial capital inputs that typify the black firms at the point of startup.

A. Introduction

The proclamation that firms employing fewer than 20 workers "have created about 88 percent of all net new jobs" in the 1980s is only one of the numerous expressions of renewed interest in small businesses (**Birch, 1987, p. 16**). Traditional small business domains such as service industries are expanding their share of aggregate economic activity (**Brock and Evans, 1986, p. 17**); rates of entry into self-employment are climbing (**Birch, 1987, ch. 3**); nontraditional entrepreneurial groups -- women, blacks, Hispanics -- are pursuing self-employment with increasing frequency (**Bates, 1987, pp. 542-4**). Economists to date have performed few empirical or theoretical studies of small businesses: there have been numerous studies of production functions but few of entrepreneurs.

This study analyzes nationwide random samples of black and nonminority entrepreneurs who entered into small business ownership between 1976 and 1982. Business longevity is investigated utilizing qualitative and quantitative measures of owner human capital; additional explanatory variables include demographic traits as well as owner financial capital inputs at the point of business startup. Econometric models are estimated that seek to differentiate traits of owners whose firms were still operating in late 1986 from those whose businesses had discontinued operations. Owner human capital and financial capital inputs at the point of business startup are found to be useful for differentiating active firms from business discontinuances. In particular, highly educated entrepreneurs employing larger financial capital inputs are more likely to create viable, lasting firms than poorly educated cohorts whose inputs of financial capital are less bountiful. Possessing less of the inputs that are associated with business viability, black owners as a group exhibit high firm discontinuance rates relative to nonminorities. Finally, black firms are held back in part by the nature of the markets in which they do business.

B. Entry into Self-Employment

Recent theoretical articles on entrepreneurship have produced several

interesting hypotheses about small business behavior. A simple model by Lucas concluded that persons having relatively more entrepreneurial ability became entrepreneurs while those possessing relatively less ability became workers. In the Lucas model, business formation and discontinuances involved "marginal" managers characterized solely by a known managerial ability parameter (**Lucas, 1978, pp. 510-8**).

A more realistic model developed by Jovanovic assumes not only that individuals differ in their entrepreneurial abilities but that they are also unsure of their abilities. Those who enter self-employment gradually learn about their managerial abilities by engaging in the actual running of a business and observing how well they do (**Jovanovic, 1982, pp. 650-3**). As they learn more about their abilities, their entrepreneurial behavior changes through time: those who revise their ability estimates upward tend to expand output while those embracing downward estimates tend to contract or to dissolve their businesses. Over time, surviving entrepreneurs acquire through experience precise estimates of their abilities; the younger firms exhibit relatively more variable behavior because they have less precise estimates of their true abilities. Because younger firms are commonly smaller firms, these behavior patterns are predicted to typify smaller and larger firms.

Data describing selected traits of small businesses (Table 1) are consistent with Jovanovic's characterizations of entrepreneurship. These nationwide samples of small firms are split into groups of younger and older businesses: the older firms, by definition, are owned by individuals who entered self-employment before 1976; the younger firms entered between 1976 and 1982. Table 1 reports mean values of 1982 total sales for the black and nonminority owner samples, measures of sales variance, and finally, the percentage of the sample firms that had discontinued business operations by late 1986. Relative to the older firm groups, the younger businesses were more likely to discontinue operations by late 1986; they were smaller regarding 1982 annual sales, and more dispersed around the sales mean values. Among the younger black firms (Table 1), 30.9

percent had discontinued business operations by late 1986; the corresponding discontinuance rate for whites was 25.7 percent. In terms of mean 1982 sales levels, blacks lagged far behind white firms. Among the younger firm groups, the ratio of black to white mean sales ($\$47,040 \div \$132,844$) was 35.4 percent. While firms formed before 1976 had much higher average sales levels than the younger firm groups, the gap between black and white business sales widened: the black, white sales ratio was 28.0 percent among the samples of firms formed before 1976. Within each of the groups portrayed in Table 1, the younger firms clearly exhibit the less settled behavior that is consistent with Jovanovic's hypothesis that they are in the process of learning their entrepreneurial abilities. An unanswered question, however, concerns the causes of the disparities in mean sales and discontinuance rates that typify white as

Table 1: Business Traits: Owners Entering Self-Employment before 1975 versus those Entering Between 1976 and 1982

	Discontinuance rate, 1986		1982 total sales (mean)		1982 total sales (Std. dev./mean)		n		
	pre-1976	1976-82	pre-1976	1976-82	pre-1976	1976-82	pre-1976	1976-82	
1. Blacks		16.9%	30.9%	\$69,231	\$47,040	2.24	3.21	2028	2796
2. White males		16.4%	25.7%	\$247,162	\$132,844	5.36	5.69	3513	4447

Source: Characteristics of Business Owners survey, compiled by the U.S. Bureau of the Census in 1987; unpublished data.

opposed to black-owned businesses. After a brief detour to explain the nature of the data utilized in Table 1 and the remainder of this study, causes of black, white business disparities are investigated in detail.

C. The Data Base

The samples of business owners analyzed throughout this study are drawn from the 1982 Characteristics of Business Owners (CBO) survey. This data source describes small businesses (and self-employed persons) in a manner unlike any previous large scale survey. The public use samples from the population census data (1980, 1970 ...) describe self-employed people as individuals; periodic business census data (1982, 1977 ...) describe businesses. The CBO data base, in contrast, is the first data base of national scope that describes self-employed people as individuals as well as describing traits of businesses these people own, such as sales, earnings, employees, capital inputs, etc. The CBO survey includes five distinct panels of data: explicit subsamples focus upon blacks, Hispanics, other minorities, women, and white males (**U.S. Bureau of the Census, 1987**).

The definition of a "small business" is by no means clear-cut. The CBO survey drew its sample from 125,000 business owners who responded to the 1982 Survey of Minority-Owned Business Enterprises. This survey, in conjunction with the 1982 Survey of Women-Owned Businesses, classified firm owners into three groups:

women, minority, or nonminority male owned. These two surveys were drawn from the universe of persons who filed in 1982 one of the following types of federal income tax forms: Schedule C, Form 1040 (sole proprietorships); Form 1065 (owners of partnerships);

Form 1120s (owners of subchapter S business corporations). Census questionnaires covering both owner traits and business traits were sent out to 125,000 owners, and nearly 80 percent of the questionnaires were returned. In some instances, one owner of several firms is picked up in the sample; in other cases, multiple owners of one firm are encountered. In this study, each firm has a unique owner; multiple owners are not permitted. Among persons filing Schedule C forms, many are not small business owners according to the commonly understood meaning of the term. I identified small business owners as the subset of the sample where owners had a financial capital investment in the business that was greater than zero and annual sales of at least \$5,000 in 1982. Observations not meeting these criteria were dropped from further consideration. For example, 21,127 responses were received from owners of firms classified as "white male owned": 30.4 percent of these observations were dropped because the owners reported 1982 sales of less than \$5,000. Of the remaining 14,707 observations, 28.2 percent were dropped because owners reported no financial capital inputs at the point of business entry. This reduced the sample size to 10,556 owners, and 8.5 percent of this group was

dropped because of nonresponse problems on certain key questionnaire items. The remaining 9,662 owners were connected with 7,960 firms, 3,513 of which were entered before 1976; the remaining 4,447 were entered by owners during the 1976-1982 time period (Table 1). Thus, 21,127 responses to the CBO survey produced a sample of 7,960 businesses owned by white males. This sample is representative -- regarding industry mix and geographic location -- of all white male small business proprietorships, partnerships, and small business corporations that file tax returns, subject to the constraints that they were operating in 1982 and produced total annual sales of at least \$5,000 in that calendar year.

The CBO survey collected data on several aspects of owner human capital, including variables measuring years of education, managerial experience, and small business exposure within one's family. Variables utilized in the econometric analysis, in addition to the explicit owner human capital measures, include year of entry into self-employment, age and sex of owner, and whether the owner created a firm de novo or entered an existing business. The CBO survey collected data on the amounts of financial capital used by self-employed persons to start or become owners of their businesses; these include debt and equity capital inputs at the point of business entry. Other relevant variables are average hours of labor input per week by the business owner, measures of the racial composition of the clientele served by CBO firms,

industry of the business, 1982 sales volume, and whether or not the business was still operating in late 1986. Businesses still operating in 1986 are referred to as "active" firms; those that have closed down by 1986 are "discontinued." Exact variable definitions are summarized below:

Ed2: for owners completing four years of high school, the value of Ed2 = 1; otherwise Ed2 = 0.

Ed3: for owners completing at least one but less than four years of college, the value of Ed3 = 1; otherwise Ed3 = 0.

Ed4: for owners completing four years of college, the value of Ed4 = 1; otherwise Ed4 = 0.

Ed5: for owners completing five or more years of college, the value Ed5 = 1; otherwise Ed5 = 0.

Family self-employment: for owners whose close relatives (mother, father, brothers, sisters, others with whom frequent contact was maintained) either owned a business or were self-employed in professional practice, Family = 1, otherwise; Family = 0.

Management experience: for owners who had worked in a managerial capacity prior to owning the business they owned in 1982, management = 1; otherwise, management = 0.

Age2: for owners between the ages of 35 and 44, Age2 = 1; otherwise Age2 = 0.

Age3: for owners between the ages of 45 and 54, Age3 = 1; otherwise Age3 = 0.

Age4: for owners 55 or older, Age4 = 1; otherwise Age4 = 0.

Sex: for male owners, Sex = 1; otherwise, Sex = 0.

Labor input: average number of hours per week in 1982 spent by the owner working in or managing the business that he/she owned.

Method of acquiring the business - if the owner entered a business that was already in operation, Ongoing = 1; if the owner was the original founder of the business, Ongoing = 0.

Year in which the business was started or acquired - a series of two variables reflecting the following categories:

1. Time82: if the business was started or ownership was acquired during 1982, then Time82 = 1; otherwise Time82 = 0;
2. Time80: if the business was started or ownership was acquired during 1980 or 1981, then Time80 = 1; otherwise Time80 = 0.

Debt: borrowed money used to start or become an owner of the business, measured in thousands of dollars.

Equity: financial capital other than borrowed money used to start or become an owner of the business, measured in thousands of dollars. The dollar value of business assets contributed by the owner at the point of business entry are also included as equity.

Leverage: the ratio of debt to equity.

Log capital: the logarithm of the sum of debt and equity capital.

Log sales: the logarithm of 1982 calendar year total sales revenues.

Open market: for firms having over 25 percent nonminority customers in 1982, open market = 1; otherwise, open market = 0.

Industry groupings: a series of self-explanatory dummy variables is employed to identify firms in six major industry groups: construction, manufacture, transportation (this category also includes communication and public utilities), trade (includes both wholesale and retail industries), fire (includes finance, insurance, and real estate), and service.

In the econometric analysis summarized in Tables 6, 8, and 9, the education variable group excludes owners having less than 12 years of formal schooling and the age variable group excludes owners under age 35.

D. Empirical Analysis of the CBO Data Base

While Jovanovic (section B above) captures the essence of the turmoil that typifies recently entered small businesses, other

social scientists have addressed the question: who are the likely survivors of the sorting out process? Some of their findings are straightforward: entrepreneurs are relatively well educated (**Douglas, 1976, pp. 40-4**). Other studies emphasize less tangible elements of entrepreneurial success, such as test score patterns on psychological tests, suggesting that individuals are endowed with differing levels of business acumen (McClelland and Winter, 1969) (**Shapiro, 1976, pp. 83-8**). The work of Lucas is in this tradition: each individual has a known managerial ability "a", where $G(a)$ is the distribution of managerial ability across the population. A firm consisting of a manager and the capital and labor he controls can produce $q = af(L,K)$ units of output. In his analysis of Small Business Administration loan data, Bates found that a straightforward measure of firm size -- the logarithm of total firm assets -- had the greatest explanatory power for delineating failed black-owned businesses from survivors (**Bates, 1973, pp. 276-80**). A similar measure -- total sales (Table 1) -- reveals differing size distributions for black and white samples of firms drawn from the CBO data base.

Table 2 examines the distribution of firms by sales categories for the black and white owners who entered business during 1976-1982. It is among

Table 2: Distribution of Firm Sales Levels, by Owner Racial,
Ethnic
Grouping (Entry between 1976 and 1982 only).

Total sales, 1982	Black owners	White owners
\$5,000-9,999	27.9%	18.0%
\$10,000-24,999	32.7%	24.9%
\$25,000-49,999	17.8%	18.5%
\$50,000-99,999	11.7%	15.9%
\$100,000-199,999	6.7%	10.8%
\$200,000-499,999	2.6%	7.6%
\$500,000 and up	0.7%	4.2%
under \$50,000 only	78.4%	61.4%

these groups of younger firms that discontinuance rates are highest overall, and the differentials between active and discontinued businesses are greatest between whites and blacks. Blacks, in particular, are relatively numerous among the smallest firm groups, but not in the \$100,000 plus categories: 60.7 percent of the black firms reported 1982 sales of under \$25,000 (Table 2) and 10.0 percent of this group generated sales volumes in the \$100,000 and up size categories. Corresponding figures for whites were 42.9 percent under \$25,000 and 22.6 percent exceeding \$100,000. Table 3 illustrates the link between firm size and discontinuance rates for the black and white firms. Note that blacks in the \$50,000 plus sales categories report a business discontinuance rate of 17.4 percent from 1982 to 1986 which is nearly identical to the 17.5 percent discontinuance rate for white firms of similar size.

Table 3: Firm Sales Levels and 1986 Status, by Owner Racial, Ethnic Grouping (Entry between 1976 and 1982 only).

	Total sales, 1982	Black owners))		White owners))	
		Active	Discontinued	Active	Discontinued
))))	
	\$5,000-9,999:				
301	#	458	322	501	
37.5%	%	58.7%	41.3%	62.5%	
	\$10,000-24,999:				
346	#	613	301	763	
31.2%	%	67.1%	32.9%	68.8%	
	\$25,000-99,999				
195	#	362	135	626	
23.7%	%	72.8%	27.2%	76.3%	
	\$50,000-99,999:				
132	#	269	57	574	
18.7%	%	82.5%	17.5%	81.3%	
	\$100,000 and up:				
168	#	231	48	841	
16.7%	%	82.8%	17.2%	83.3%	
	All:				
1142	#	1933	863	3305	
25.7%	%	69.1%	30.9%	74.3%	
	Above \$49,999 only				
300	#	500	105	1415	
17.5%	%	82.6%	17.4%	82.5%	
	Below \$50,000 only				
842	#	1433	758	1890	
30.8%	%	65.4%	34.6%	69.2%	

While black businesses in the higher size categories have discontinuance rates that are in line with those typifying nonminority firms, those below the \$50,000 sales level are clearly less likely to remain in business than whites. Black businesses reporting 1982 sales of less than \$10,000 exhibit the highest discontinuance of any of the subgroups summarized in Table 3: 41.3 percent of the blacks were out of business by 1986. The abundance of very small black-owned firms is rooted in part in the size of the factor endowments available to these businesses.

Microeconomic theories of firm behavior view businesses as producing outputs, quantities of which are a function of labor and capital input levels:

$$\text{output} = F(\text{labor inputs, capital inputs})$$

Because marginal products associated with these factor inputs are assumed to be positive, incremental labor and capital inputs cause increased outputs. Greater quantities of capital and labor therefore provide the resources that can generate higher sales volumes relative to firms possessing fewer of these factors of production. Factor endowment quality similarly influences sales volume. Interrelations between factors of production also shape factor input quantities and hence sales levels. For example, the ability of owners to raise debt capital is related to factor quality and quantity. Highly educated and experienced entrepreneurs investing substantial amounts of equity capital into new businesses tend to have maximum access to debt capital sources

such as commercial banks. In general, the financial capital structure of the small business at the point of startup is endogenous: stronger startups have greater access to sources of capital; they are less likely to be undercapitalized relative to the weaker startup, which has severely limited access to financial capital sources (**Bates, 1989**).

Smaller factor endowments at the point of business startup explain much of the size differentials observed among the black and white samples of firms entered since 1976. In particular, blacks lag far behind nonminority firms in terms of financial capital inputs. Total financial capital at startup averaged \$46,200 for whites -- nearly two and one half times greater than the mean black financial input of \$18,574, (Table 4). In terms of median inputs, the financial capital investment characterizing the white sample is exactly three times the level reported by blacks. Only 6.1 percent of the black startups began business with financial capital inputs exceeding \$50,000; the majority of these firms started with under \$5,000 in financial capital, and 71.9 percent of them began operations with less than \$10,000.

The gap in financial inputs between whites and blacks is widest in the case of debt capital, with white firms reporting mean debt of \$24,787, versus \$9,270 for blacks. Commercial banks were the main source of debt capital, exceeding by far the combined total of debt extended to these firms by all other sources. According to Table 4, over 32 percent of the white firms received bank loans,

and the corresponding figures for blacks was 25.1 percent. For all of the firms under consideration, bank loan recipients began business with substantially larger debt and equity capital than those employed by

Table 4: Financial Capital Structure: Firms Entered in the 1976-1982

Time Period

Sample Firms with Financial Capital Inputs Greater than Zero*

	Black	White
1. Total financial capital at time of entry:		
mean	\$18,574	\$46,200
median	\$ 2,500	\$ 7,500
% under \$10,000	71.9%	52.3%
% under \$50,000	93.9%	84.2%
2. Equity:		
mean	\$ 9,304	\$21,412
median	\$ 2,500	\$3,375
% under \$5,000	69.6%	54.7%
3. Debt:		
mean	\$ 9,270	\$24,787
median	0	0
% under \$5,000	77.3%	65.8%
4. Leverage** (mean)		
	2.95	3.74
n	2796	4447

* All firms with 1982 sales under \$5,000 are excluded.

** leverage is defined as the ratio of debt to equity; it is constrained

so that the value of the ratio cannot exceed 19.

Table 4: (continued)

	Black	White
<u>Bank Loan Recipients Only</u>		
1. Total financial capital at the time of entry:		
mean	\$35,228	\$79,495
median	\$15,000	\$22,500
% under \$10,000	48.1%	28.2%
% under \$50,000	86.5%	72.7%
2. Equity:		
mean	\$10,351	\$21,017
median	\$ 2,625	\$ 4,125
% under \$5,000	67.5%	53.9%
3. Debt:		
mean	\$24,887	\$58,479
median	\$ 7,125	\$16,625
% under \$5,000	43.4%	24.9%
4. Leverage (mean)	7.11	8.19
5. Percent of sample with bank loans	25.1%	32.1%
n	702	1426

those not receiving bank loans. Among blacks, for example, mean financial capital inputs were nearly four times larger among the bank borrower group (\$35,228) in comparison to nonborrowers. Black bank borrowers reported mean debt inputs of \$24,887 versus \$58,479 for whites; median values of debt inputs reveal gaps of similar relative magnitudes.

High debt and equity levels commonly coexist among the larger small business startups. Among the white bank loan recipient sample, for example, the simple correlation between the debt and equity variables was +.62. In a related study explaining debt input levels, I found that one dollar of equity capital, for white bank loan recipients, was associated with an incremental \$1.58 in debt capital, other things equal; in the black owner sample, the corresponding one dollar of equity input generated \$0.55 in debt capital (**Bates, 1989**). While a detailed analysis of the determinants of firm financial structure is beyond the scope of this paper, it is clear that the financial capital inputs of black owners are much smaller than those of their white cohorts, and that blacks, on average, are less highly leveraged than whites. Whites consistently command more financial capital than blacks at the point of business startup, and the differentials tend to be wider for debt capital, narrower for equity capital.

A second major difference between white and the black business sample concerns access to markets. Most black businesses sell largely to other minorities, and the firms owned by minorities in

general -- and blacks in particular -- are heavily concentrated in the central cities of the nation's largest metropolitan areas. Findings by Handy and Swinton indicate that the local black clientele is still the overwhelming market for black-owned businesses (**Swinton and Handy, 1983**). They found that growth in black business receipts between 1972 and 1977 at the SMSA level was powerfully influenced by the strength of local black purchasing power. Not surprisingly, black firms are located largely in central city areas where the population is predominantly black and Hispanic. Many of these areas are characterized by low and variable personal incomes, low labor force participation rates, and high unemployment rates among their residents -- they are ghettos. And the state of the ghetto business community reflects the economic circumstances of its clientele: the internal ghetto market is weak due to the low incomes of most of its residents. Table 5 indicates that firms from both samples -- black and white -- differ systematically in terms of sales, financial capital, employment, and discontinuance rates when they are divided into two groups: those serving a clientele that is largely or entirely minority and those serving a clientele that is either diverse racially or largely nonminority. The firms described in Table 5 are classified as minority market oriented if 75 percent or more of their customers are minorities; others are classified as competing in the nonminority marketplace. White-owned firms that are minority market oriented actually have the highest discontinuance

rate among the business groups that serve this market segment.

Table 5: Racial Ethnic Composition of the Customers of the Sample Firms:
Businesses Entered in the 1976-1982 Time Period

A. Firms Oriented Toward the Minority Market Place (mean values):

	Black owners	White owners*
1982 sales	\$38,946	\$88,106
% with sales under \$25,000	63.8%	52.0%
Total financial capital	\$16,187	\$39,014
Employment	0.4	0.6
% with no paid employees	85.4%	85.0%
% still active, 1986	67.7%	67.2%
n	1643	421

B. Firms Competing in the Nonminority Market Place (mean values):

1982 sales	\$59,215	\$128,013
% with sales under \$25,000	56.0%	40.1%
Total financial capital	\$21,975	\$43,656
Employment	0.8	1.6
% with no employees	79.6%	69.2%
% still active, 1986	71.2%	76.4%
n	1153	2693

*Among white owners, nonresponse to the question of clientele racial composition was high.

Although the black and white business owners are all very diverse groups, certain traits stand out as typifying each of these collections of businesses:

- 1) Black owners begin business with the least financial capital inputs; black entrepreneurs are older than whites; black firms are most oriented to serving a minority clientele.
- 2) White owners begin business with more financial capital and human capital resources than blacks.

All of these differences are likely to explain some of the black, white differentials in firm sales (as well as discontinuance rates).

In order to identify the relative importance of these diverse factors for explaining business viability, various econometric models are estimated. First, sales are explained with a multiple linear regression model in which the explanatory variables are owner human capital and financial capital inputs, owner demographic traits, and the composition of the firm's clientele. The rationale behind this specification is straightforward. Higher quality and greater quantity owner human capital inputs are expected to increase sales. The quality of human capital is measured by two variables: years of formal schooling and managerial experience; labor input quantity for the owner is picked up by average number of hours worked per week in the business. Financial capital inputs are measured by the logarithm the sum of debt and equity capital invested by the owner at the point of business startup: greater

financial capital inputs are expected to increase sales. Applicable demographic traits include owner age and sex. Owners at the tails of the age distribution, particularly those over 55, are expected to generate less sales than those in the middle of the age distribution of business owners. Male owners are expected to produce greater sales, other things equal, than females. Regarding clientele, firms competing in the open market place are expected to generate greater sales than those serving a minority customer group.

The Jovanovic model indicated that small business owners know least about their entrepreneurial abilities at the point when they first enter self-employment. This is expected to cause the youngest firms to produce lower sales relative to the older, more established businesses. Another factor suggested by the Jovanovic model concerns business entry via purchasing an ongoing business versus starting a new one. Purchasing an existing (ongoing) business may permit a new owner to benefit from established managerial procedures; some degree of client goodwill may be present. Consistent with Jovanovic's model, the new owner who is unsure of his managerial abilities may reduce his uncertainty by buying into a firm where managerial practices of the previous owners are embodied in the business. If this process of piggybacking upon existing expertise is successful, then buying ongoing firms, other things equal, should be associated with higher sales levels.

The dependent variable in the regression is the logarithm of 1982 business sales. A problem is presented by the fact that some of the sample firms began business during 1982; sales reported for these firms reflect less than 12 months of business operations. To maximize consistency of the sales variable across firms, those formed during 1982 are not used. Finally, the sales variable is a measure of the size and scope of the firms under consideration: sales attempts to measure the value of annual production. Annual sales is really a proxy for annual value added by the firm. Sales is a good proxy for intraindustry data because sales should be a fairly constant proportion of value added within a given industry. Certain industries such as retail and wholesale (trade industries) are typified by value added that is a low proportion of sales, relative to other industry groups. Similarly, construction typically has a low ratio of value added to sales, while service industries most commonly have high value added to sales ratios. This phenomenon is controlled for in the regressions (Table 6) by including dummy variables representing six major industry groups: construction, manufacture, transportation, trade, finance, insurance and real estate, and other services.

Table 6 reports the regression equation estimates of log sales for the black and white owner groups. Mean values for all of the Table 6 explanatory variables are summarized in Table 7. The Table 6 findings indicate broadly that well educated owners investing large amounts of financial capital in their businesses are likely

to generate high 1982 sales levels. Larger quantities of owner labor input are consistently and strongly associated with higher 1982 sales volumes. Further, firms formed in 1980 and 1981 are clearly producing low sales levels relative to businesses formed in 1976-1979. Entering into an ongoing business is associated with greater 1982 sales for both groups, but this phenomenon appears to be particularly strong for white owners. Possessing management experience prior to small business entry is positively related to sales levels for all groups (Table 6), but the relationship between sales and experience is not statistically significant in the case of black owners. The typical owner of a firm with high sales volumes possessed management experience as well as four or more years of education beyond high school level. He purchased an ongoing firm

Table 6: Linear Regression Models: Explaining 1982 Total Sales for Owners Entering Business in the 1976-1981 Time Period

	<u>Black owners</u>		<u>White owners</u>		
	<u>Regression coefficient</u>	<u>Standard error</u>	<u>Regression coefficient</u>	<u>Standard error</u>	
Constant	6.5090*	.1837	6.5589*	.1555	
Ed2	.1839*	.0650	.0305	.0665	
Ed3	.0623	.0697	.0008	.0723	
Ed4	.1625*	.0877	.2152*	.0772	
Ed5	.1632*	.0756	.1340*	.0759	
Management	.0301	.0444	.1649*	.0410	
Age2	.1377*	.0557	-.0043	.0475	
Age3	.1010*	.0611	.0095	.0553	
Age4	.0130	.0757	-.0904	.0668	
Sex	.1494*	.0502	--	--	
Labor input	.0107*	.0010	.0126*	.0009	
Log capital	.3049*	.0187	.3381*	.0146	
Ongoing	.0844*	.0509	.3044*	.0470	
Time80	-.1607*	.0425	-.2586*	.0387	
Construction	.4272*	.1124	.2945*	.0789	
Manufacture	-.0891	.1703	.4670*	.0866	
Transportation	.0694	.0998	.0455	.0853	
Trade	.4191*	.0833	.5297*	.0701	
Fire	-.1978	.1348	-.0196	.0924	
Service	-.0236	.0803	.1633*	.0668	
Open market	.1484*	.0434	--	--	
Minority market	--	--	-.1725*	.0659	
n		2115		3679	
		$R^2 = .257$	$F = 33.01$	$R^2 = .268$	$F = 70.55$

*Statistically significant at the .05 level.

Table 7: Mean Values of Table 6 Explanatory Variables

	Black owners	White owners
Ed2	.286	.320
Ed3	.240	.208
Ed4	.101	.163
Ed5	.188	.192
Management	.492	.619
Age2	.360	.330
Age3	.265	.215
Age4	.132	.122
Sex	.751	--
Labor input	41.811	45.643
Log capital	8.737	9.294
Ongoing	.231	.241
Time80	.495	.461
Construction	.061	.123
Manufacture	.018	.083
Transportation	.097	.089
Trade	.285	.226
Finance, insurance and real estate	.035	.070
Other service	.422	.296
Open market	.409	--
Minority market	--	.092
Dependent variable:		
Log sales	10.073	10.623

and invested a substantial amount of financial capital into the venture at the point when he entered into ownership of the business. Finally, he had owned the business for at least two full years prior to 1982, and worked full-time in it.

Firms generating low sales volumes are the converse of the above portrait. Investment of financial capital into the enterprise is low. Owners of firms reporting low 1982 sales levels are much more likely to work only part-time in these ventures; their educational backgrounds are often weak -- many possess less than a high school degree. Finally, many of these firms have been formed very recently, during 1980 or 1981. For both whites and blacks, orientation of the firm to a clientele that is predominantly minority is strongly associated with low 1982 sales volumes.

Several of the most important variables for explaining sales levels performed quite consistently in the regression equations. The financial capital input and the quantity of owner labor input variables showed very high and similar levels of explanatory power for all groups. The time80 variable was a similarly consistent although less powerful sales determinants, relative to the financial capital and owner labor input variables. Certain industries were found to be consistently and strongly associated with high sales volumes -- particularly the trade and construction industries -- which reflects their low ratios of value added to sales.

For other explanatory variables such as age, variable coefficients varied widely across owner groups. Among blacks, owners in the 35-54 age brackets produced high sales levels relative to younger and older owners, but similar relationships of age to sales were not present among whites. Management variable coefficients, in contrast, were low for blacks but high and statistically significant for whites. The human capital and age variables clearly produce less stable variable coefficients across the groups in comparison to other types of explanatory variables.

Use of the open market variable to explain sales levels produced a problem unique to the white owner group. Due to the design of the questionnaire that generated the CBO data base, firms serving a clientele that was 90 percent or more white were least likely to respond to the question regarding racial composition of the firm's clientele. In fact, over 28 percent of the firms in the white sample did not answer this question. The open market variable was therefore not included in the

Table 6 white owner regression. Instead, the variable was redefined to pick up only those white-owned firms serving a clientele that was 75 percent or more minority: for white firms whose clientele is 75 percent or more minority, "minority market", = 1; otherwise this variable = 0. The coefficients (Table 6) of .1484 for open market and -.1725 for minority market, for black and white firms respectively, indicate that both groups lose sales volume to the extent that they concentrate on a customer base that

is predominantly minority.

Tables 6 and 7 explain a substantial part of the lagging sales of black-owned firms relative to the white male sample. Lower capital inputs and greater reliance on minority markets are the major reasons why the black firms produced 1982 sales that were low relative to whites. Other reasons for relatively low black firm sales include lower labor inputs, a higher proportion of firms formed in 1980 and 1981, a lower proportion of owners with four plus years of college, and, finally, relatively low variable coefficients, particularly for the management and ongoing variables.

As a group, the Table 6 regression equations explaining sales levels were well behaved, with all equations being statistically highly significant (F values ranged from 33.01 to 70.55). Explanatory variable coefficients had the hypothesized signs in nearly all cases, excepting the age variables. The usefulness of the Table 6 variables for explaining firm behavior is further explored in the discriminant analysis exercises reported in Tables 8 and 9.

Table 3 clearly demonstrates that low firm sales levels are associated with high rates of business discontinuance. The factors in Table 6 which explain sales levels are expected to be useful for explaining firm viability in general. The discriminant analysis in Tables 8 and 9 attempts to clarify further the relationships among business viability and owner demographic traits, inputs of

financial and human capital, and the racial composition of the firm's clientele. The dependent variable in the discriminant analysis is whether or not the business is still operating in late 1986. Businesses that are still operating are active firms; those that have closed down are discontinued. Explanatory variables utilized in Tables 8 and 9 include the human capital and age variables used in Table 6 as well as debt and equity capital (measured in thousands of dollars), and three new variables:

- 1) Leverage: the ratio of debt to equity capital;
- 2) Time82: businesses started or acquired in 1982 are included in the discriminant analysis exercises;
- 3) Family: family, as well as leverage and time82, is defined in detail in section C above.

Family business background is of particular interest because this factor has been repeatedly linked by social scientists to the business acumen characteristic. Family (close relative) pursuit of self-employment is expected to encourage the development of entrepreneurial values within an individual as well as increasing one's familiarity with the small business milieu. When asked, "Prior to your going into business, had any of your close relatives ever owned a business . . .,"¹ 41.9 percent of the CBO white male owner sample responded affirmatively. "Close relatives" included parents, brothers, sisters, spouse, or other relatives with which

¹This question appears as Census questionnaire item nine on the CBO survey form (U.S. Bureau of the Census, 1987).

the owner had frequent contact. **Shapiro (1975)** found that more than 50 percent of the entrepreneurs he studied had self-employed fathers. In his classic study of Harlem small business, Caplovitz (1973) found that owners from a small business family background were generally more successful, and that family business background was much more common among white than black owners.

Greater quantities of both debt and equity capital inputs are expected to improve the viability of small business startups. Scale economies are expected to be operative, thus reinforcing this positive relationship.

Theorists, however, have produced contradictory hypotheses about the impact of debt financing on firm viability. Clearly, borrowers suffer when incremental debt capital inputs fail to generate returns exceeding borrowing costs. **Modigliani and Miller (1963)** have shown that a corporate tax system with interest payment deductibility creates a situation where the value of the firm is an increasing function of its debt -- total value ratio. Others have claimed a downside for increased use of debt financing, that the present value of the expected costs associated with potential future bankruptcy also increase (**Brennon and Schwartz, 1978, pp. 103-13**). Not only do expected bankruptcy costs increase with debt, but personal tax considerations which "pass on" the tax advantages prevent many small firms from capturing interest deductibility features of debt. All of this suggests that the hypothesis that greater debt inputs increase firm viability may be qualified by a

countervailing trend: a high degree of leverage may reduce viability.

Discriminant function standardized coefficients are reported in Tables 8 and 9; the standardized variable coefficients permit comparisons of the relative explanatory power of the independent variables. The samples of black and white owners for which discriminant functions are estimated are identical to the owner samples described in Tables 1 through 5 of this study. Unlike Tables 6 and 7, firms formed in 1982 have not been excluded. The objective of discriminant analysis is to weigh and combine the explanatory variables in a fashion that forces the groups to be as statistically distinct as possible. The analysis is successful in the sense that the active and discontinued firms are shown to be statistically distinct.

In order of explanatory power, the time80, time82 variables are most successful at delineating active from discontinued firms, whether black or white. Financial capital inputs rank second in terms of discriminating power for black firms; they are third in importance for the white sample.

Financial capital inputs enter the analysis in two distinct forms. When equity and debt enter as separate explanatory variables, they are positively related to viability, with equity generally emerging as the stronger of the two variables. It is advantageous, however, to combine these two variables. Whereas equity and debt each assume zero values with nontrivial frequency,

their sum is always greater than zero. Both variables are log normally distributed and their sum, capital, is expressed in log form as an explanatory variable. Use of capital (model two) instead of its component parts results in a more precise discriminant function as reflected in the applicable F values. The leverage variable produced standardized coefficients that were distinctly different across samples. The applicable coefficient for white firms was .0276 (Table 9), suggesting that firm leverage is trivial for delineating active from discontinued business. This finding must be interpreted in view of the fact that the active firms

(Table 9) are clearly more highly leveraged than the discontinued businesses. Reliance upon debt capital at the point of business startup is clearly not associated with business weakness or heightened risk of failure. Table 9 shows that, other things equal, additional debt capital inputs increase business viability, and that the discontinued firms actually utilize debt less than the surviving businesses. Table 8's discriminant analysis findings for black firms contrast with those reported for whites, with financial capital variables assuming greater importance.

Table 8: Discriminant Analysis: Blacks Entering Business in the 1976-1982 Time Period

Variable	Discriminant Function Coefficients	Discriminant Function Coefficients	Group Mean Vectors	
	Standardized coefficients	Standardized coefficients	Active firms	Discontinued firms
	Model #1	Model #2		
Ed2	-.0286	-.0277	.286	.298
Ed3	-.0238	-.0184	.232	.258
Ed4	.0427	.0416	.099	.109
Ed5	.2366	.1657	.195	.164
Management	-.2193	-.1958	.480	.509
Family	-.1815	-.1728	.247	.284
Age2	.1411	.1000	.362	.363
Age3	.3674	.2959	.273	.219
Age4	.0100	-.0059	.118	.123
Equity*	.1305	--	10.250	7.183
Debt*	.1195	--	10.281	7.005
Log Capital	--	.4200	8.812	8.568
Leverage	--	.1675	3.206	2.387
Ongoing	-.2825	-.2839	.220	.275
Open market	.1945	.1675	.425	.384
Time80	-.6417	-.5762	.355	.416
Time82	-.7681	-.7003	.218	.301
Sex	.1457	.0872	.760	.723
n	1933	863		

Multivariate test for differences between the two groups:

1st model:

canonical correlation = .182
 approx. standard error = .018
 likelihood ratio = .967
 F = 5.98 indicating that the group differences are statistically significant;
 " = .01 level.

2nd model:

canonical correlation = .204
 approx. standard error = .018
 likelihood ratio = .958
 F = 7.53 indicating that the group differences are statistically significant;
 " = .01 level.

*Measured in thousands of dollars.

Table 9: Discriminant Analysis: White Males Entering Business in the 1976-1982 Time Period

Variable	Discriminant Function Coefficients	Discriminant Function Coefficients	Group Mean Vectors	
	Standardized coefficients	Standardized coefficients	Active firms	Discontinued firms
	Model #1	Model #2		
Ed2	.2624	.2572	.318	.334
Ed3	.1541	.1501	.203	.236
Ed4	.4080	.3957	.174	.145
Ed5	.4990	.4661	.200	.152
Management	-.0682	-.0920	.619	.617
Family	.0850	.0716	.425	.388
Age2	.0216	.0008	.327	.321
Age3	.1545	.1254	.218	.184
Age4	-.0562	-.0636	.116	.127
Equity*	.2054	--	24.149	13.491
Debt*	.0639	--	27.424	17.157
Log Capital	--	.3525	9.365	9.097
Leverage	--	.0276	3.841	3.434
Ongoing	.1902	.1157	.250	.217
Minority market	-.2741	-.2538	.086	.121
Time80	-.6818	-.6516	.360	.443
Time82	-.7282	-.7063	.153	.230
n			3305	1142

Multivariate test for differences between the two groups:

1st model:

canonical correlation = .186
 approx. standard error = .014
 likelihood ratio = .965
 F = 10.64 indicating that the group differences are statistically significant;
 " = .01 level.

2nd model:

canonical correlation = .192
 approx. standard error = .014
 likelihood ratio = .963
 F = 11.37 indicating that the group differences are statistically significant;
 " = .01 level.

*Measured in thousands of dollars.

The fact that the leverage variable shows a strong direct relationship to black firm viability is particularly noteworthy. While Table 8's discriminant function indeed implies that greater leverage leads to greater firm viability, it may be that the line of causation is running in the other direction. The following scenario seems likely: black owners who can achieve a position of being highly leveraged are, in fact, extremely attractive from a credit risk standpoint. Regarding human capital variables in particular, debt capital sources such as bankers have much more precise information on borrower traits than Table 8's discriminant analysis

does. While this study identifies owners with four or more years of college, the bank lending officer knows who has the C.P.A. certificate as opposed to the B.A. degree in art history. I am suggesting that the C.P.A. would get the larger loan, other things equal; thus the most viable business prospect in a world with supply side constraints on capital access would get the largest loan. An econometric model that uses a crude measure of the human capital of the most credit worthy owners would therefore be likely to conclude that greater leverage, other things equal, is directly related to greater business viability. The fact that the leverage variable coefficient, although positive for whites, is much larger in Table 8 is consistent with the finding that capital constraints

are tighter for black owners.²

The strong and persistent finding is that additional inputs of debt capital increase the viability of business startups, whether white or black. Equity and debt capital input levels are positively correlated (correlations range from +.21 for the entire black sample to +.62 for the white bank borrower group), indicating that these two capital sources are typically compliments rather than substitutes. The more viable firms at the point of startup have greater access to debt: they borrow more heavily than their weaker counterparts; they create larger scale operations; they are more likely to still be active firms in late 1986. Particularly among black owners, the discontinued firms as a group are much less highly leveraged than the active firm group.

In light of the findings linking firm viability to size of financial capital investment in small business startups, one may be tempted to conclude that more debt would produce increases in firm viability in an across-the-board fashion, particularly for blacks. This may be true for certain stronger firms, but more debt is not likely to benefit the weaker business startups. Before proceeding, it is useful to summarize what is known about owners who make substantial financial investments in business startups:

- 1) debt and equity at the point of startup are compliments;

²A recent study found that banks are significantly less willing to lend black-owned firms, even after applicable borrower and business traits are controlled for (**Ando, 1988**).

- 2) in the CBO small business samples, the single most important determinant of debt level is the size of equity capital inputs: more equity is associated with higher debt levels **(Bates, 1989)**;
- 3) beyond equity, highly educated owners are the ones who receive the largest loans **(Bates 1989)**;
- 4) a complimentary study showed that the largest loans went to those owners who possessed the highest personal incomes prior to entering self-employment **(Bates, 1974)**. Having maximum access to debt, therefore, is associated with 1) being highly educated, 2) having a large personal income, and 3) investing a substantial sum of equity capital into one's small business.

While discriminant analysis findings on leverage are the most interesting of the empirical results, the very strong findings regarding time80 and time82 are also important. The Jovanovic model indicated that small business owners know least about their entrepreneurial abilities at the point where they first enter self-employment. The time82 variable identifies the newest of the businesses in the business samples. Among white males, for example, firms formed in 1982 (17.1 percent of the sample) accounted for 22.7 percent of the 1986 discontinuances. The same pattern characterized the black business group. The newest firms are most likely to fail and the time82 coefficients indicate that this factor is the strongest single determinant of business

viability. Similarly, firms entered during the 1980-81 period (time80) were more likely to discontinue operations by 1986 than those which entered between 1976 and 1979; they were less likely to discontinue relative to those entered in 1982. The longer the period since the owner entered his business, the more likely it was that the business remained active in 1986.

Another variable in the discriminant analysis, which produced very similar results for the business samples, was racial composition of the firm's clientele. Reliance on a minority clientele, other things equal, is strongly associated with business discontinuance whether the firm is black or white. Nonetheless, it is the black business community that is disproportionately handicapped by this phenomenon. Fewer than ten percent of the white businesses relied upon a clientele that was 75 percent or more minority, while well over half of the black firm group relied upon the minority marketplace.

Sex of owner was one of the less important variables in the analysis, but the findings for blacks do show that males were less likely to discontinue business over the 1982 through 1986 time period than females. Age and education produced similar results for blacks and whites, although differences in magnitude typify the variable coefficients. As in Table 6, age is a much more important explanatory variable for black owners than for whites. Blacks 35 to 54 years old are much more likely to remain in business than their younger or older cohorts. In every sample, owners 55 and

older are predicted to be more likely to discontinue business, relative to those 45 to 54. Owners with five or more years of college were, in every case, associated with active firms, but the relationship between education and firm survival was stronger for whites, weaker for blacks.

The family background variable had sharply different results for blacks and whites in the analysis. Coming from an environment where one's parents (close relatives) were self-employed is associated with less business viability for black owners. The entrepreneur as a role model may be perceived differently in minority and nonminority communities. One study argued that self-employed blacks have historically been perceived negatively in the black community (**Bates, 1973b, Ch.2**). This phenomenon might encourage children of business owners to avoid self-employment. If self-employment has a low status, then parents who are successful business owners may indeed discourage their children from pursuing self-employment. More research is needed on this topic. However, the analysis strongly indicates that uncritical acceptance of the conventional wisdom that coming from a family business background leads to greater viability, is completely unwarranted. Finally, purchasing an ongoing business was found to be a shortcut to business viability for whites but not for black owners. Business buyouts are frequently financed by loans from former owners, but this practice is much less common for blacks than whites; white owners purchasing ongoing firms are nearly three times more likely

to be financed by the former owner, in comparison to blacks. Greater assistance from former owners may explain why whites are more successful than blacks in creating viable firms from buyout situations.

The perverse behavior of the management experience variable is the one result that is difficult to interpret. Having managerial experience is, for every sample of firms, directly associated with business discontinuance. Alternative forms of this variable, measured as number of years of management experience, were investigated, as were various functional forms. These different formulations produced unstable variable coefficients, due partly to correlations with two other explanatory variables, age and education. A qualitative human capital concept such as managerial experience may not really be measurable in simple quantitative terms.

E. Concluding Remarks

The fact that firms started with larger financial capital and human capital inputs are most likely to stay in business partly explains why blacks exhibit rates of firm discontinuance that are high relative to whites. Certain characteristics typify the firms that are most likely to remain in business, irrespective of whether the owner is black or white:

- (1) investment of substantial amounts of financial capital at the point of business startup;

- (2) competition in the open marketplace, as opposed to catering to a clientele that is overwhelmingly minority;
- (3) the owner is highly educated, possessing five or more years of college education.

The higher business discontinuance rates observed among the black sample is rooted most strongly in the lower financial capital inputs that typify the black firms at the point of business startup. Reliance upon a clientele that is 75 percent or more minority ranks second as a cause of disproportionately high black business failure rates. These findings, in conjunction with complimentary findings on determinants of firm sales levels, suggest that progress in the black business community would be fostered by greater access to capital markets and more active participation in the open market place.

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